

an amplifier having an input terminal with an impedance approaching infinity and providing at an output terminal signals corresponding to the signals from the electrode to eliminate any noise resulting from movement of the patient, and

an output stage connected to the amplifier and constructed to reject noise and to pass signals at frequencies below a particular value.

Claim 2 (previously amended) In a combination as set forth in claim 1 wherein

a second electrode is constructed to be attached to the patient's skin at a position displaced from the first electrode and wherein a second amplifier corresponding to the first amplifier is connected to the second electrode and wherein

a common mode rejection is provided to the signals from the electrodes to eliminate noise from the signals provided by the amplifiers.

Claim 3 (original) In a combination as set forth in claim 1 wherein

the input impedance of the amplifier is approximately 10^{15} ohms.

Claim 4 (original) In a combination as set forth in claim 1 wherein

the impedance of the patient's skin is in a range to approximately 200 kilohms and wherein the electrode is attached to the patient's skin.

Claim 5 (original) In a combination as set forth in claim 2 wherein

the input impedance of the amplifier is approximately 10^{15} ohms, and wherein

the impedance of the patient's skin is in a range to approximately 200 kilohms, and wherein

the electrode is attached to the patient's skin.

Claim 6 (previously amended) In a combination for providing a signal at one of the selective positions on a patient's skin of the patient's parameters at the one of the selective positions,

an electrode constructed to be applied to the one of the selective positions of the patient's skin to provide a signal representative of the patient's parameters at this selective position,

an amplifier connected to the electrode to amplify the signal at the electrode without producing noise resulting from movements of the patient, and

a low pass filter connected to the amplifier to provide an output in which any remaining noise is eliminated and signals in a particular frequency range are passed by the low pass filter,

the amplifier having characteristics of providing a high input impedance and a low output impedance.

Claim 7 (previously amended) In a combination as set forth in claim 6 wherein

a second electrode connected to the patient's skin provides a reference and wherein

the amplifier constitutes a differential amplifier for eliminating noise from the signals provided by the electrodes.

Claim 8 (original) In a combination as set forth in claim 6 wherein

the amplifier includes a differential stage for eliminating noise from the signals provided by the electrode.

Claim 9 (original) In a combination as set forth in claim 6 wherein

the amplifier provides an input impedance approaching infinity.

Claim 10 (previously amended) In a combination as set forth in claim 6 wherein
the output of the amplifier is introduced to the low pass filter.

Claim 11 (previously amended) In a combination as set forth in claim 9 wherein
the low pass filter limits the amplitude of the output from the low pass filter
to facilitate the operation of the amplifier in processing the signal and wherein
the amplifier has a low output impedance.

Claim 12 (previously amended) In a combination as set forth in claim 6 wherein
the amplifier provides an input impedance approaching infinity, and
wherein
the output from the amplifier is introduced to the low pass filter, and
wherein
the low pass filter limits the amplitude of the output from the low pass filter
to facilitate the operation of the amplifier in processing the signals and wherein
the amplifier has a low output impedance.

Claim 13 (previously amended) In combination for providing at selective positions
on a patient's skin signals representing the patient's parameters at these positions,

a first electrode constructed to be attached to the patient's skin at a first one
of the selective positions to provide signals representing the patient's parameters at this
position,

a second electrode constructed to be attached to the patient's skin at a
second one of the selective positions different from the first position to provide reference
signals,

a pair of amplifiers respectively connected to the first and second electrodes and having properties of providing a high input impedance approaching infinity and having a low output impedance to eliminate noise resulting from movements of the patient, and

a low pass filter connected to the amplifiers for eliminating noise and for passing signals at relatively low frequencies.

Claim 14 (previously amended) In a combination as set forth in claim 13 wherein

the amplifiers are constructed to obtain the difference between the signals on the first and second electrodes and are provided without substantially identical constructions.

Claim 15 (previously amended) In a combination as set forth in claim 13 wherein

the amplifiers provide a differential relationship for eliminating noise resulting from movements of the patient.

Claim 16 (previously amended) In a combination as set forth in claim 13 wherein

the combination of the patient's skin and each individual one of the electrodes has an impedance to approximately 200 kilohms and each of the amplifiers has an input impedance of approximately 10^{15} ohms and substantially identical construction relative to the other amplifier to eliminate noise resulting from the patient's movements.

Claim 17 (previously amended) In a combination as set forth in claim 13 wherein

the combination of the patient's skin and each individual one of the electrodes has an impedance to approximately 200 kilohms and each of the amplifiers has an input impedance of approximately 10^{15} ohms and wherein

the amplifiers have a substantially identical construction.

Claim 18 (original) In a combination as set forth in claim 13 wherein

each of the amplifiers has an output impedance of approximately fifty (50) ohms to seventy-five (75) ohms.

Claim 19 (previously amended) In a combination as set forth in claim 13 wherein

the amplifiers are constructed to obtain the difference between the signals on the first and second electrodes and wherein

the amplifiers provide a differential relationship for eliminating noise and for eliminating signals resulting from movements of the patient.

Claim 20 (previously amended) In a combination as set forth in claim 19 wherein

the combination of the patient's skin and each individual one of the electrodes has an impedance to approximately 200 kilohms and each of the amplifiers has an input impedance of approximately 10^{15} ohms and wherein

each of the amplifiers has an output impedance of approximately fifty (50) ohms to seventy five (75) ohms and wherein

the amplifiers have substantially identical constructions.

Claim 21 (previously amended) In combination for providing at selective positions on a patient's skin signals representing the patient's parameters at these positions,

a first electrode coupled to the patient's skin at one of the selective positions for producing first signals representing the patient's parameters at this position,

a second electrode coupled to the patient's skin at a position other than the one of the selective positions for producing reference signals,

a first amplifier coupled to the first electrode for amplifying the first signals, the first amplifier having an input impedance approaching infinity, and

a second amplifier coupled to the second electrode for amplifying the second signals, the second amplifier having an input impedance approaching infinity, and

the first and second amplifiers being connected in a differential circuit to the first and second electrodes to eliminate noise even during movements of the patient and to produce an output signal representing the difference between the first and reference signals.

Claim 22 (previously amended) In a combination as set forth in claim 21 wherein

the first and second amplifiers have substantially identical characteristics and the first and second electrodes have substantially identical characteristics.

Claim 23 (previously amended) In a combination as set forth in claim 21 wherein

each of the amplifiers has an input impedance of approximately 10^{15} ohms and has an output impedance of approximately 50 ohms to 75 ohms.

Claim 24 (previously amended) In a combination as set forth in claim 22 wherein each of the first and second amplifiers has a low output impedance with substantially identical characteristics.

Claim 25 (previously amended) In combination for providing at selective positions on a patient's skin signals representing the patient's parameters at these positions,

a first electrode coupled to the patient's skin at one of the selective positions for producing ~~second~~ signals representing the patient's parameters at this position,

a second electrode connected to the patient's skin at a position displaced from the one of the selective positions for producing reference signals,

a low pass filter differentially connected to the first and second electrodes for producing low frequency signals representing the difference between the signals on the electrodes, and

a pair of substantially identical amplifiers differentially connected to the low pass filter for eliminating any noise provided in the low pass filter from movement of the patient, each of the amplifiers having an input impedance approaching infinity.

Claim 26 (previously amended) In a combination as set forth in claim 25 wherein

each of the amplifiers has an input impedance of approximately 10^{15} ohms.

Claim 27 (previously amended) In a combination as set forth in claim 25 wherein

each of the amplifiers has an output impedance having a low value considerably less than the input impedance of the amplifier.

Claim 28 (previously amended) In a combination as set forth in claim 26 wherein

each of the amplifiers has an output impedance of approximately 50 ohms to 75 ohms.

Claim 29 (previously amended) In a combination as set forth in claim 26,

the pair of amplifiers including a pair of output terminals providing the output from the amplifier, and

a second low pass filter differentially connected to the output terminals of the amplifiers for passing the low frequency signals representing the difference between the signals on the output terminals of the amplifiers.

Claim 30 (previously amended) In a combination as set forth in claim 25,
the electrodes having identical characteristics, and
the amplifiers having identical characteristics.

Claim 31 (previously amended) In a combination as set forth in claim 25 wherein
the low pass filter is formed from a plurality of capacitors differentially
connected to the pair of amplifiers.

Claim 32 (previously amended) In a combination as set forth in claim 25 wherein
the amplifiers include a pair of transistors having terminals respectively
connected to the first and second electrodes.

Claim 33 (original) In a combination as set forth in claim 6 wherein
the amplifier has an input and an output and wherein
the low pass filter is a first low pass filter and is connected to the output of
the amplifier to provide an output in which noise is eliminated and signals in the
particular frequency range are passed by the low pass filter and wherein
a second low pass filter is connected between the electrode and the input of
the amplifier to eliminate noise and to pass signals in the particular frequency range.

Claim 34 (previously amended) In a combination as set forth in claim 33 wherein
the first low pass filter operates on a differential basis and wherein
the second low pass filter operates on a differential basis.

Claim 35 (previously amended) In combination for providing at selective positions on a patient's skin signals representing the patient's parameters at these positions,

an electrode constructed to be attached to the patient's skin at an individual one of the selective positions to provide signals indicative of the parameters on the patient's body at the selective position; and

an amplifier constructed to pass the signals from the electrode without loss in signal strength and without any change in signal characteristics.

Claim 36 (previously submitted) In a combination as set forth in claim 35,

a circuit connected to the amplifier to eliminate noise in the signals from the amplifier.

Claim 37 (previously submitted) In a combination as set forth in claim 36 wherein

the circuit operates as a low pass filter to eliminate noise.

Claim 38 (previously amended) In combination for providing at selective positions on a patient's skin signals representing the patient's parameters at these positions,

a pair of electrodes constructed to be attached to the patient's skin at a spaced pair of selective positions to provide signals indicative of the parameters at the spaced pair of the selective positions, and

a pair of amplifiers each constructed to be connected to an individual one of the electrodes to pass signals from the individual one of the electrodes and to provide output signals representing the difference between the signals on the electrodes without loss in the strength of the signals on the electrodes and without changes in the characteristics of the differences of the signals between the electrodes, the amplifiers being provided with characteristics, and being differentially connected to each other, to

eliminate noise resulting from movements of the patient during the production of the signals in the electrodes.

Claim 39 (previously amended) In a combination as set forth in claim 38,

a differential circuit connected to the amplifiers to further eliminate noise in the signals representing the difference between the signals on the electrodes.

Claim 40 (previously amended) In a combination as set forth in claim 39 wherein

the differential circuit operates as a low pass filter to further eliminate noise and wherein the electrodes have identical characteristics and wherein the amplifiers have identical characteristics.

PLEASE ADD THE FOLLOWING NEW CLAIMS:

Claim 41 (New)

In combination for providing at selective positions on a patient's skin signals representing the patient's parameters at these positions,

first and second electrodes constructed to be attached to the patient's skin respectively at first and second ones of the selective positions to provide first and second signals representing the patient's parameters at these positions,

first, second and third capacitors connected in a series relationship,

each of the first and third capacitors having a first terminal providing a reference potential and having a second terminal connected to an individual one of the terminals in the second capacitor,

the second terminals in the first and third capacitors being respectively connected to receive the first and second signals and to provide across the second capacitor a third signal constituting the difference between the first and second signals, and

a pair of amplifiers respectively connected to the terminals of the second capacitor and providing a high input impedance and a low output impedance to eliminate noise resulting in the second capacitor from movements of the patient and each of the amplifiers having a unity gain.

Claim 42 (New)

In a combination as set forth in claim 41 wherein

the first and second electrodes have substantially identical characteristics and the pair of amplifiers have substantially identical characteristics and the first and third capacitors have substantially identical characteristics.

Claim 43 (New)

In a combination as set forth in claim 41 wherein

the amplifiers have input impedances approaching infinity and have low output impedances and have substantially identical characteristics and wherein

a first resistor is connected between the first electrode and the second terminal of the first capacitor to define a first low pass filter with the first capacitor and is connected to an input terminal of the first amplifier and wherein

a second resistor is connected between the second electrode and the second terminal of the third capacitor to define a second low pass filter with the third capacitor and is connected to an input terminal of the second amplifiers and wherein

the first and second resistors have substantially identical characteristics.

Claim 44 (New)

In a combination as set forth in claim 43 wherein

the first and second low pass filters are connected in a differential relationship to provide across the second capacitor a signal which is free of noise and wherein

the first and second electrodes have substantially identical characteristics and the amplifiers have substantially identical characteristics and the first and third capacitors have substantially identical characteristics.

Claim 45 (New)

In combination as set forth in claim 41 wherein

fourth, fifth and sixth capacitors are connected in a series relationship and wherein each of the fourth, fifth and sixth capacitors has first and second terminals and wherein the first terminals of the fourth and sixth capacitors are at a reference potential and wherein the second terminals of the fourth and sixth capacitors are respectively connected to the first and second terminals of the fifth capacitor.

Claim 46 (New)

In a combination as set forth in claim 41 wherein

each of the amplifiers has first and second input terminals and an output terminal and wherein

the first input terminal of each amplifier is connected to one of the electrodes and wherein the second input terminal of each amplifier is connected to the output terminal.

Claim 47 (New)

In a combination as set forth in claim 46 wherein

the impedance between the input terminals of each amplifier approaches infinity and wherein the output impedance on each of the amplifiers is low in comparison to the impedance between the input terminals of the amplifier.

Claim 48 (New)

In a combination as set forth in claim 42 wherein

each of the amplifiers has an input impedance approaching infinity and has a low output impedance and the amplifiers have substantially identical characteristics and wherein

a first resistor is connected between the first electrode and the second terminal of the first capacitor to define a first low pass filter with the first capacitor and is connected to an input terminal of the first amplifier and wherein

a second resistor is connected between the second electrode and the second terminal of the third capacitor to define a second low pass filter and is connected to an input terminal of the second amplifier and wherein

the first and second resistors have substantially identical characteristics.

Claim 49 (New)

In a combination as set forth in claim 43 wherein

the first and second low pass filters are connected in a differential relationship to provide across the second capacitor a signal which is free of noise and wherein

the first and second electrodes have substantially identical characteristics and the amplifiers have substantially identical characteristics and the first and third capacitors have substantially identical characteristics.

Claim 50 (New)

In a combination as set forth in claim 48 wherein

each of the amplifiers has first and second input terminals and an output terminal and wherein

the first input terminal of each amplifier is connected to one of the electrodes and wherein the second input terminal of each amplifier is connected to the output terminal of the amplifier.

Claim 51 (New)

In a combination as set forth in claim 46 wherein

the impedance between the input terminals of each amplifier approaches infinity and wherein the output impedance of each of the amplifiers is low in comparison to the impedance between the input terminals of the amplifier.

Claim 52 (New)

In a combination as set forth in claim 41 wherein

a first resistor is connected between the first electrode and the first terminal of the second capacitor to define a first low pass filter with the first capacitor and wherein,

a second resistor is connected between the second electrode and the second terminal of the second capacitor to define a second low pass filter with the third capacitor and to define a differential relationship with the first low pass filter.

Claim 53 (New)

In a combination as set forth in claim 50 wherein

a first resistor is connected between the first electrode and the first terminal of the second capacitor to define a first low pass filter with the first capacitor and wherein,

a second resistor is connected between the second electrode and the second terminal of the second capacitor to define a second low pass filter with the third capacitor and to define a differential relationship between the first low pass filter and the second low pass filter.

Claim 54 (New)

In a combination as set forth in claim 47 wherein

a first resistor is connected between the first electrode and the first terminal of the second capacitor to define a first low pass filter with the first capacitor and wherein,

a second resistor is connected between the second electrode and the second terminal of the second capacitor to define a second low pass filter with the third capacitor and to define a differential relationship between the first low pass filter and the second low pass filter.

Claim 55 (New)

In a combination for providing at selective positions on a patient's skin signals representing the patient's parameters at these positions,

first and second electrodes connected to first and second positions on the patient's skin to provide signals representing the patient's parameters at these positions,

first and second amplifiers respectively connected to the first and second electrodes to provide signals corresponding to the signals produced at the electrodes, each of the amplifiers having a high input impedance and a low output impedance,

first and second low pass filters respectively connected to the outputs of the first and second amplifiers, the low pass filters being connected in a differential relationship to provide an output signal representing the difference between the outputs of the first and second amplifiers, the first and second low pass filters respectively including first and second capacitors providing the outputs from the filters, and

a third capacitor connected in series with the first and second capacitors to provide an output representing the difference between the signals on the first and second capacitors.

Claim 56 (New)

In a combination as set forth in claim 55 wherein

the electrodes have substantially identical characteristics and the low pass filters have substantially identical characteristics and the first and second amplifiers have substantially identical characteristics.

Claim 57 (New)

In a combination as set forth in claim 56 wherein

each of the first and second amplifiers constitutes an operational amplifier having an input impedance approaching infinity and having a low output impedance in comparison to the input impedance of the amplifier.

Claim 58 (New)

In a combination as set forth in claim 57 wherein

each of the first and second amplifiers has first and second input terminals and an output terminal, the first input terminal of each of the amplifiers being connected to one of the electrodes and the second input terminal of each of the amplifiers being connected to the output terminal of the amplifier.

Claim 59 (New)

In a combination as set forth in claim 55,

each of the amplifiers constituting an operational amplifier having an input impedance approaching infinity and having an output impedance which is low in comparison to the value of the input impedance.